

Claims:

1–2. (Canceled)

3. (Previously Presented) The method of claim 18, wherein generating the approval mark comprises:

generating a digital signature as the approval code; and
generating a signature image associated with the approval code.

4. (Previously Presented) The method of claim 18, wherein generating one or more second control codes comprises:

generating a single second control code for all of the text content.

5. (Previously Presented) The method of claim 18, wherein the print out has two or more physical pages and generating the one or more second control codes comprises:

generating one or more second control codes, each second control code corresponding to the text content on a page of the one or more physical pages.

6. (Previously Presented) The method of claim 18, wherein generating the one or more second control codes comprises:

encrypting the canonical form with a private key, the private key having an associated public key certificate for retrieving a public key associated with the private key.

7–12. (Canceled)

13. (Previously Presented) The computer program product of claim 25, wherein the instructions to generate the approval code cause the data processing equipment to:

generate a digital signature as the approval code; and
generate a signature image associated with the approval code.

14. (Previously Presented) The computer program product of claim 27, wherein the instructions to generate the one or more second control codes cause the data processing equipment to:

generate a single second control code for all of the text content.

15. (Previously Presented) The computer program product of claim 27, wherein the print out has two or more physical pages, and the instructions to generate the one or more second control codes cause the data processing equipment to:

generate one or more second control codes, each second control code corresponding to the text content on a page of the one or more physical pages.

16. (Previously Presented) computer program product of claim 27, wherein the instructions to generate the one or more control codes cause the data processing equipment to:

encrypt the canonical form with a private key, the private key having an associated public key certificate for retrieving a public key associated with the private key.

17. (Canceled)

18. (Previously Presented) A computer implemented method executed in a workflow system as part of a workflow within the workflow system, comprising:

generating an electronic document in a workflow system for use with an external entity that does not exchange electronic documents with the workflow system, the electronic document having text content, the electronic document further having a human-readable document appearance representing the text content;

attaching one or more approval codes to the electronic document, such that when the document is printed, each approval code generates an approval mark;

converting the text content into a canonical form, wherein the text content is in an unambiguous reading order;

generating control codes for the electronic document as part of a workflow in the workflow system, the control codes including one or more first control codes that each correspond to a respective approval code, wherein the one or more first control codes authenticate the approval mark associated with the respective approval code, and one or more second control codes generated from the canonical form of the text content, wherein the one or more second control codes authenticate the text content; and

creating a print out of the electronic document, the print out including a full-sized version of the human-readable document appearance representing the text content, the respective approval mark corresponding to each approval code, the one or more first control codes being usable to authenticate the one or more respective approval marks, and the one or more second control codes being usable to validate the text content of the print out;

sending the print out to the external entity;

receiving a modified print out at the workflow system back from the external entity, the modified print out comprising the print out sent to the external entity with a modification;

validating the modified print out within the workflow system using the one or more control codes;

integrating the validated and modified print out into the workflow; and

continuing the workflow for the validated print out within the workflow system.

19. (Previously Presented) The computer implemented method of claim 18, wherein the modified print out comprises the print out sent to the external entity and a subsequently added human signature.

20. (Previously Presented) The computer implemented method of claim 18, wherein generating an electronic document in a workflow system comprises routing the electronic document to one or more workflow locations; and wherein attaching one or more approval codes to the electronic document comprises verifying the content of the electronic document at each of the one or more workflow locations.

21. (Previously Presented) The computer implemented method of claim 18, wherein the one or more approval codes authenticate the text content of the electronic document and identify one or more approvers associated with the approval codes.

22. (Previously Presented) The computer implemented method of claim 18, wherein the print out comprises a barcode representation of the one or more first control codes and the one or more second control codes.

23. (Previously Presented) A computer program product, tangibly embodied in a machine-readable storage device, comprising instructions operable to cause a programmable processor to:

receive a print out of an electronic document having text content generated in a workflow system, the print out being received in an external entity that does not exchange electronic documents with the workflow system, the print out having a human-readable document appearance representing the text content, control codes and one or more approval codes, the control codes including one or more first control codes each generated for a respective approval code and one or more second control codes generated from a canonical form of the text content, the print out further representing a full-size version of the human-readable document appearance;

generate approval marks using the respective approval codes, the one or more first control codes generated for each approval code being usable to authenticate the approval marks generated by the approval code;

convert the text content of the human-readable appearance of the print out to the canonical form of the text content; and

access a portal of the workflow system to authenticate the approval marks and to validate the print out using the canonical form and the first and second control codes.

24. (Previously Presented) The computer program product of claim 23, wherein the print out comprises a barcode representation of the one or more first control codes and the one or more second control codes.

25. (Previously Presented) A workflow system comprising:

means for generating an electronic document in a workflow system as part of a workflow, the electronic document being for use with an external entity that does not exchange documents with the workflow system, the electronic document having a text content and a human-readable document appearance representing the text content;

means for attaching one or more approval codes to the electronic document, such that when the document is printed, each approval code generates an approval mark;

means for converting the text content into a canonical form, wherein the text content is in an unambiguous reading order;

means for generating control codes, the control codes including one or more first control codes that each correspond to a respective approval code, wherein the one or more first control codes authenticate the corresponding approval mark, and one or more second control codes generated from the canonical form of the text content, wherein the one or more second control codes authenticate the text content;

means for printing a print out of the electronic document to be sent to the external entity as part of the workflow, the print out including a full-sized version of the human-readable document appearance representing the text content, the respective approval mark corresponding to each approval code, the one or more first control codes being usable to authenticate the one or more respective approval marks, and the one or more second control codes being usable to validate the canonical form of the text content of the print out;

a portal for validating the print out and authenticating each approval mark, the validation being performed using the canonical form generated from the print out and using the first and second control codes;

means for receiving a modified print out at the workflow system from the external entity, wherein the modified print out comprises the print out sent to the external entity and a modification;

means for validating the modified print out within the workflow system using the one or more control codes appearing on the print out; and

means for continuing the workflow in the workflow system after the print out has been approved by the external entity.

Applicant : Josef Dietl
Serial No. : 10/675,930
Filed : September 29, 2003
Page : 8 of 17

Attorney's Docket No.: 24307-0009001 / 2002P00240 US

26. (Previously Presented) The workflow system of claim 25, wherein the print out comprises a barcode representation of the one or more first control codes and the one or more second control codes.

27. (Previously Presented) A computer program product, tangibly embodied in a machine-readable storage device, comprising instructions operable to cause a processor to:

generate an electronic document in a workflow system as part of a workflow, the electronic document being for use with an external entity that does not exchange documents with the workflow system, the electronic document having text content, the electronic document further having a human-readable document appearance representing the text content;

attach one or more approval codes to the electronic document, such that when the document is printed, each approval code generates an approval mark;

convert the text content into a canonical form, wherein the text content is in an unambiguous reading order;

generate control codes for the electronic document as part of a workflow in the workflow system, the control codes including one or more first control codes each corresponding to a respective approval code, wherein the one or more first control codes authenticate the respective approve code, and one or more second control codes generated from the canonical form of the text content, wherein the one or more second control codes authenticate the text content;

create a print out of the electronic document to be sent to the external entity as part of the workflow, the print out including a full-sized version of the human-readable document appearance representing the text content, the respective approval mark corresponding to each approval code, the one or more first control codes being usable to authenticate the one or more respective approval marks, and the one or more second control codes being usable to validate the canonical form of the text content of the print out;

send the print out to an external entity;

receive the print out at the workflow system from the external entity, the print out comprising a human signature added subsequent to sending the print out to the external entity;

validate the print out comprising the human signature within the workflow system using the one or more control codes;

integrate the validated print out comprising the human signature into the workflow; and continue the workflow for the validated print out within the workflow system.

Applicant : Josef Dietl
Serial No. : 10/675,930
Filed : September 29, 2003
Page : 10 of 17

Attorney's Docket No.: 24307-0009001 / 2002P00240 US

28. (Previously Presented) The computer program product of claim 27, wherein the print out comprises a barcode representation of the one or more first control codes and the one or more second control codes.